

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

Claim 1. (currently amended): A noise reduction apparatus which reduces a noise level of noise contained in an input signal, comprising:

a detecting device which detects the noise level of the noise from the input signal by use of the high frequency component of the input signal;

a gain controlling device which generates a first control signal and a second control signal on the basis of the detected noise level, the first control signal being used for adjusting a level of the input signal so as to make the detected noise level equal to a predetermined threshold level, and the second control signal being used for adjusting a level of a reduced adjusted signal so as to restore the level of the reduced adjusted signal to an original level of the input signal;

an adjusting device which adjusts the level of the input signal on the basis of the first control signal;

a reducing device which reduces a level of the adjusted input signal in accordance with a predetermined reducing characteristic and generates the reduced adjusted signal; and,

a restoring device which restores the level of the reduced adjusted signal to the original level of the input signal on the basis of the second control signal.

Claim 2. (previously presented): The noise reduction apparatus according to Claim 1, wherein said detecting device comprises:

an extracting device which extracts a high frequency component of the input signal from the input signal;

a rectifying device which rectifies the extracted high frequency component;

an envelope signal generating device which generates an envelope signal of the extracted high frequency component; and

a level analyzing device which detects a lowest level of the envelope signal.

Claim 3. (previously presented): The noise reduction apparatus according to Claim 1, wherein said detecting device comprises:

a sound existing part detecting device which detects a sound existing part of the input signal; and

a noise level detecting device which detects the noise level of the noise contained in the sound existing part.

Claim 4 (previously presented): The noise reduction apparatus according to Claim 1, wherein said adjusting device comprises:

a determining device which determines whether or not the noise level of the noise is higher than the predetermined threshold level; and

a level adjusting device which adjusts the level of the input signal so as to make the noise level equal to the predetermined threshold level if said determining device determines that the noise level is higher than the predetermined threshold level.

Claim 5. (previously presented): The noise reduction apparatus according to Claim 1, wherein said reducing device comprises:

a dividing device which divides the adjusted input signal into a plurality of divisional components whose frequency bands are different from each other;

a plurality of signal level detecting devices, each of which detects a level of one of the divisional components;

a plurality of attenuating devices, each of which attenuates one of the divisional components on the basis of the detected level of the corresponding divisional component;

a mixing device which mixes all of the attenuated divisional components.

Claim 6. (previously presented): The noise reduction apparatus according to Claim 1, wherein said adjusting device comprises an attenuator, and said restoring device comprises an amplifier.

Claim 7. (Previously presented): The noise reduction apparatus according to Claim 6, wherein said amplifier amplifies the reduced adjusted signal by using an inverse number of an attenuation factor of said attenuator as an amplification factor.

Claim 8. (currently amended): A noise reduction method which reduces a noise level of noise contained in an input signal, comprising:

a detecting process which detects the noise level of said noise from the input signal by use of the high frequency component of the input signal;

a gain controlling process which generates a first control signal and a second control signal on the basis of the detected noise level, the first control signal being used for adjusting a level of the input signal so as to make the detected noise level equal to a predetermined threshold level, and the second control signal being used for adjusting a level of a reduced adjusted signal so as to restore the level of the reduced adjusted signal to an original level of the input signal;

a adjusting process which adjusts the level of the input signal on the basis of the first control signal;

a reducing process which reduces a level of the adjusted input signal in accordance with a predetermined reducing characteristic and generates the reduced adjusted signal; and

a restoring process which restores the level of the reduced adjusted signal to the original level of the input signal on the basis of the second control signal.

Claim 9. (previously presented): The noise reduction method according to Claim 8, wherein said detecting process comprises:

a extracting process which extracts a high frequency component of the input signal from the input signal;

a rectifying process which rectifies the extracted high frequency component;

an envelope signal generating process which generates an envelope signal of the extracted high frequency component; and

a level analyzing process which detects a lowest level of the envelope signal.

Claim 10. (previously presented): The noise reduction method according to Claim 8, wherein said detecting process comprises;

- a sound existing part detecting process which detects a sound existing part of the input signal; and
- a noise level detecting process which detects the noise level of the noise contained in the sound existing part.

Claim 11. (previously presented): The noise reduction method according to Claim 8, wherein said adjusting process comprises:

- a determining process which determines whether or not the noise level of the noise is higher than the predetermined threshold level; and
- a level adjusting process which adjusts the level of the input signal so as to make the noise level equal to the predetermined threshold level if it is determined in said determining process that the noise level is higher than the predetermined threshold level.

Claim 12. (previously presented): The noise reduction method according to Claim 8, wherein said reducing process comprises:

- a dividing process which divides the adjusted input signal into a plurality of divisional components whose frequency bands are different from each other;
- a detecting process which detects a level of each of the divisional components;
- a attenuating process which attenuates each of the divisional components on the basis of the detected level of the corresponding divisional component;

a mixing process which mixes all of the attenuated divisional components.